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09/101,083	07/08/98	MIYASHITA		

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TARAZA EXAMINER

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/101,083

Applicant(s)
Miyashita et al.

Examiner
D. Lawrence Tarazano

Group Art Unit
1773



☒ Responsive to communication(s) filed on Sep 29, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-40 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-40 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☒ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 12

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1773

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 26-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear if the applicants are claiming a method or an article, since the claims recite "the organic EL element" and not the method of forming such.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-3, 5, 6, 9, 11-15, 17-21, 23-33, and 36-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Shirasaki et al. (5,895,692).

Art Unit: 1773

Shirasaki et al. teach electroluminescent devices (column 4, lines 35+). As shown in figure 1 below, the structure comprises a transparent substrate (11), transparent pixel electrodes (12), a luminescent layer (13) comprising a poly-N-vinylcabazole (PVCZ) matrix having color pixels (13a, b, c) which had been printed by ink jet or other means and then diffused into the polymer matrix. The devices also have an electron injection layer (14) deposited over the luminescent layer and a second set of electrodes (15).

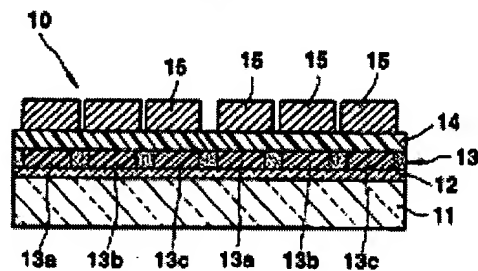
FIG.1

Figure 7B show the R (Red), G (Green) and B (Blue) pixels being formed on the surface of the luminescent hole transport layer (16), by a lithographic (coating) or ink jet method (column 7, lines 14+). These pixels represent discontinuous non-overlapping layers and meet the requirement that there are three colored layers. These pixels have predetermined shape when printed, and this relates to the dot shape of the pixels in the final product. While a diffusion step occurs in the formation of the structures, this does not detract from the fact that the shape of the printed pixel is the shape of the pixel in the final product. Regarding claim 40, because the colored pixels do not overlap, they

Art Unit: 1773

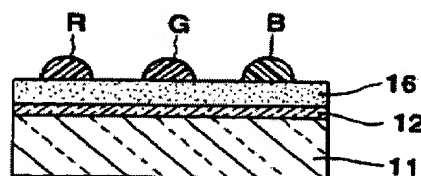
do not build on themselves. Each layer of colored pixels covers different areas of the substrate layer. Thus, the layers applied in any order would result in the same product.

While claim 19, recites that the blue layer is formed by vapor deposition, this is a process limitation. The structures taught by Shirasaki et al. have a blue layer as required.

Process limitations in product claims are not limited to the manipulations of the recited steps, only the structure implied by the steps. "Even though product - by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product - by - process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe , 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 20, since dyes work by electron excitement, an electron in the dye would be excited and then transfer to the matrix which functions as a hole material.

FIG.7B



Art Unit: 1773

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10, 22, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki et al. (5,895,692).

Regarding claims 10 and 22, as discussed above, Shirasaki et al. teach electroluminescent devices, but they are silent regarding the use of a protective layer on top of the electrodes (15). However, in the art of electronics, electrodes are generally fragile and prone to deterioration; therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included a protective layer on top of the electrodes in the structures taught by Shirasaki et al. in order to produce a more robust structure.

Regarding claims 34 and 35, the colored pixels are put down by a lithographic (coating) or ink jet method, but Shirasaki et al. are silent the order in which the colored pixels are applied. In the absence of unexpected results relating to the order of the layers, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have applied the non-overlapping colored pixels in any order, including the order claimed, since the same product would result.

Art Unit: 1773

6. Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki et al. (5,895,692) in view of Nakano et al. (5,317,169).

As discussed above Shirasaki et al. teach electroluminescent devices having a luminescent layer sandwiched between two electrode layers. The light emitting layer (13) is made of polymers such as polyvinyl carbazole which emit light upon electronic excitation. While various polymers can be used they are silent regarding the use of materials such as polyparaphenylene vinylene.

Nakano et al. teach that materials such as polyvinyl carbazole results in structures having low luminescence (column 1, lines 54+). However, polyparaphenylene vinylene materials - $(\text{Ar}-\text{CH}=\text{CH})_n$ - according to Nakano et al. have excellent light emitting properties in which the films are easily formed (column 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used paraphenylene vinylene materials as taught by Nakano et al. in the luminescent layer (13) of the structures taught by Shirasaki et al. in order to produce structure having improved luminescent properties.

7. Claims 7, 8, 19, 20, 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirasaki et al. (5,895,692) in view of Thompson et al. (6,013,982).

Shirasaki et al. teach pixels formed by ink-jet methods but they are silent regarding producing the blue ones by vapor-deposition.

Art Unit: 1773

Thompson et al. teach electroluminescent devices . In the luminescent layer, the red, green, and blue pixels can formed by an ink jet process, or they can form only the red and green by an ink jet process, and then form the OBLED (organic blue light emitting device) layer by a thermal evaporation method (vapor deposition) (column 4, line 46 to column 5, line 37).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have produced the blue pixels in the films taught by Shirasaki et al. by a vapor deposition method since these are functionally equivalent methods of producing a structure in which a multicolor electroluminescent device can be produced.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Response to Arguments

8. Applicant's arguments filed 9-29-2000 have been fully considered but they are not persuasive. The applicants state that the EL device claimed can only be made by ink jet printing method, and that Shirasaki et al. use a diffusion step which makes the claimed device different from what is claimed. Even though there is a diffusion step, it is the examiner's position that the pixels taught by Shirasaki et al. have a predetermined shape. The shape of the printed pixel will be the shape of the pixel in the final product.

Art Unit: 1773

The pixel materials taught by Shirasaki et al. are patterned and non-overlapping. The colors of red, green, and blue are applied as separate layers; however, in the final product they form a single layer because of the non-overlapping pattern. The applicants claim patterned layers so the patterned structure taught by Shirasaki et al. would be encompassed by the instant claims.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Lawrence Tarazano whose telephone number is (703) 308-2379. The examiner can normally be reached on M-F from 8:30 am to 5:30 pm.

Application/Control Number: 09/101,083

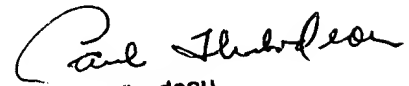
Page 9

Art Unit: 1773

The official fax number for the art unit is (703)-305-3599. The special fax number for amendments after final is (703)-305-5408. The number for unofficial faxes is (703)-305-5436.

D. Lawrence Tarazano

December 7, 2000



Paul Thibodeau
Supervisory Patent Examiner
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